

What is Claimed Is:

1. A method in an OFDM direct conversion transceiver having a transmitter and a receiver, the method including:

selectively establishing a physical connection between an output terminal of the transmitter and an input terminal of the receiver;

5 outputting from the transmitter an OFDM signal generated based on a local oscillator signal;  
generating a demodulated signal in the receiver by demodulating the OFDM signal, received by the receiver via the physical connection, using the local oscillator signal;

determining amplitude and phase imbalance parameters based on performing frequency-domain estimation of amplitude and phase imbalances in the demodulated signal; and

10 performing imbalance compensation on a received wireless OFDM signal based on the determined amplitude and phase imbalance parameters.

2. The method of claim 1, wherein the generating step includes outputting I and Q components of the demodulated signal, the determining step includes determining the amplitude and phase imbalances of the I and Q components.

3. The method of claim 2, wherein the performing step includes performing time domain-based I/Q compensation based on the determined amplitude and phase imbalance parameters.

4. The method of claim 1, wherein the selectively establishing step includes connecting the output terminal and the input terminal for a prescribed interval based on one of:

a power-up sequence for the OFDM direct conversion receiver;

5 detecting a wireless OFDM signal carrying a packet specifies a destination address distinct from a prescribed address of the OFDM direct conversion transceiver;

expiration of a prescribed time interval; and

a detected idle state in the receiver.

5. The method of claim 1, wherein the outputting step includes sending the OFDM signal to the output terminal following amplification and mixing thereof using the local oscillator signal.

6. An OFDM direct conversion transceiver including:

a transmitter configured for generating a first OFDM signal based on a local oscillator signal;

a receiver having a mixer for demodulating a received OFDM signal to a demodulated OFDM signal based on the local oscillator signal, and a compensation module configured for performing  
5 imbalance compensation on the demodulated OFDM signal based on determined amplitude and phase imbalance parameters; and

a loopback switch configured for selectively supplying the first OFDM signal as the received OFDM signal to the receiver via a physical connection;

the receiver further including an imbalance estimator configured for frequency-based  
10 determination of the amplitude and phase imbalance parameters based on the first OFDM signal following demodulation thereof by the mixer.

7. The transceiver of claim 6, wherein the mixer is configured for outputting I and Q components of the demodulated OFDM signal, the imbalance estimator configured for determining the amplitude and phase imbalance based on the I and Q components of the first OFDM signal following demodulation thereof.

8. The receiver of claim 7, wherein the compensation module is configured for performing time domain-based I/Q compensation based on the determined amplitude and phase imbalance parameters.

9. The receiver of claim 6, further comprising switch logic configured for establishing the physical connection for a prescribed interval based on one of:

a power-up sequence for the OFDM direct conversion receiver;

detecting a wireless OFDM signal carrying a packet specifies a destination address distinct  
5 from a prescribed address of the OFDM direct conversion transceiver;

expiration of a prescribed time interval; and

a detected idle state in the receiver.